



111 POWDER MILL RD., MAYNARD, MASS., 01754

MODEL 260  
SOLID STATE STEREO AMPLIFIER

Tape Output

|                                       |           |
|---------------------------------------|-----------|
| Rated Voltage Output to Tape Recorder | 0.5v      |
| Minimum Recommended Load Resistance   | 200K ohms |

Pre-Amplifier

Input:

|                                                       |                              |
|-------------------------------------------------------|------------------------------|
| Tape Head - Input Impedance                           | 47K ohms                     |
| Signal for Rated Output                               | 2 mv                         |
| S/N Ratio                                             | 52 db                        |
| Phono - Input Impedance (All Switch Positions)        | 47K ohms                     |
| Signal for Rated Output (Adjustable By Switch)        | 3, 5, 9 mv                   |
| S/N Ratio                                             | 55 db                        |
| High Level Inputs - Input Impedance                   | 50K ohms                     |
| Signal for Rated Output                               | .5 v                         |
| S/N Ratio                                             | 75 db                        |
| Frequency Response in Flat Position                   | 20-20 KC $\pm$ 1.0 db        |
| Treble Controls Measured at 10,000 cps, Boost and Cut | 10 db $\pm$ 2 db             |
| Bass Controls Measured at 30 cps, Boost and Cut       | 12 db $\pm$ 2 db             |
| Scratch Filter                                        | -4 db/octave: -3 db @ 5K cps |
| Rumble Filter                                         | -10 db @ 50 cps $\pm$ 2 db   |
| Loudness Compensation (maximum)                       | +9 db @ 50 cps               |
| Loudness Compensation                                 | +2.5 db @ 10K cps            |

Amplifiers

|                                                   |                          |
|---------------------------------------------------|--------------------------|
| *Music Power (IHF)                                | 40 w each channel        |
| *Steady State (rms)                               | 30 w each channel        |
| Total Harmonic Distortion                         | 0.8%                     |
| Frequency Response                                | 20-20,000 cps $\pm$ 1 db |
| Power band width at rated distortion (IHF Method) | 20-20,000 cps            |
| Damping Factor                                    | 20                       |
| Range of Line Voltage and Frequency               | 105-120 v, 50-60 cps     |
| Power Consumption - 117 v at 60 cps (stand-by)    | 25 w                     |

\*Specification for 8 ohm load.

TEST PROCEDURE

Measure resistance to chassis in the following locations: Collector of both top and bottom output transistors.

Collector (Top) - Approximately 3000 ohms

Collector (Bottom) - Approximately 1500 ohms

Across Speaker Taps - Approximately 500 ohms

Measure resistance across each SR 1-5 diode on RX1 scale - 4.5 to 8 ohms

1. Balance Adjustment

With no signal input and 8 ohm loads connected, measure voltage on case of output transistors Q10-Q110. Should measure between 68-72 volts. Set voltage at collector of bottom output

transistors, Q11 left channel and Q111 right channel, for one-half supply voltage, approximately 35 volts, using A3-R6 (left channel) and A103-R6 (right channel) balance pots.

## 2. Bias Adjustment

Using Triplet VOM, measure across R-15 and R-115 .82 ohm emitter resistors of Q11-Q111 with VOM set to 12 ma scale. Set .8 ma by adjusting A3-R11 (left channel) and A103-R11 (right channel) bias pots, on P.C. boards. Recheck Step No. 1 of Test Procedure (balance adjustment).

## TRANSISTOR PRECAUTIONS

### Electrical and Mechanical Precautions

1. Check heat sinks for burrs, chips, etc., under the mounting surface of the transistor.
2. All cracked printed circuit boards should be replaced.
3. Only 60 watt or smaller soldering irons are to be used because larger ones emit too much heat and will cause the circuit boards to de-laminate or possibly crack. Use as little heat as possible to obtain good solder connection.
4. Boards should be handled only by the edges. Do not put fingers across the boards.
5. Be exceptionally careful to install the correct transistor in the correct socket; and correctly installed into the socket.

### Test Precautions

1. Mica insulators and silicon grease shall be used when installing power transistors. Make a good solid contact with insulator, but be careful not to puncture it because it is just a little thicker than a human hair. Be very observant of metal filings, chips and solder because they are attracted to the silicon grease.
2. The cases of some of the transistors we are using are "hot" (have voltage on them) so be very careful not to short them.
3. Be sure the right transistor is in the right socket.
4. Do not short the output or the fuses will blow.
5. All clip leads, scope probes, and meter leads should be insulated so that only the tip of the lead will be bare. This is to prevent accidental shorting.
6. Never check any voltage by sparking against chassis.
7. When checking transistors for shorts, use only X1,000 scale on meter because X1 and X10 may provide too much current for the transistor to take. Only power transistors can be tested on X100,000 or X1 range. There is 350 ma on the XL range and 30v on the X100,000 range (Triplet 630 VOM).
8. All test gear will be grounded to the unit and also will be isolated from each other (load box, etc.)
9. Always turn all power off when changing transistors and wait 30 sec. for capacitors to discharge.
10. Check all transistors in unit for heat dissipation. If it is uncomfortable to the touch then it is no good. Shut power off immediately.
11. Hum can be induced by having hands on or near the chassis.

### Some Transistor Characteristics

1. QA-10 Collector tied to case.

Q2N2926

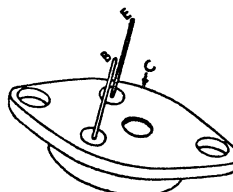
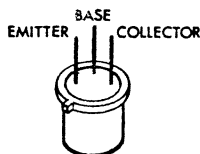
QA-9 Nothing tied to case.

Q2N508A

Q2N2613

QP-8 Collector tied to case.

QP-8-1



2. A tube can withstand prolonged overload whereas a transistor cannot, so when testing, start with a low input signal and increase slowly until desired output is reached. After measurements have been made, reduce input signal.

3. NPN pos. voltage on collector with respect to the emitter. PNP neg. voltage on collector with respect to the emitter for proper operation.

4. Arrow on the emitter indicates the direction of current flow.

5. PNP



NPN

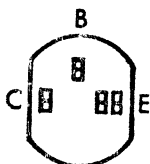


6. Output transistors should be matched by color code located on case of transistor. Matched pairs should be used in each channel.

### Installation Precautions

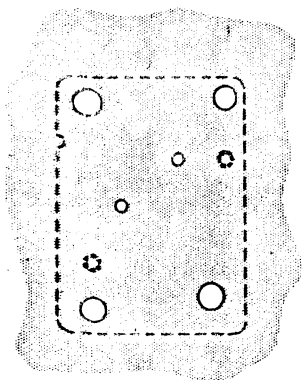
The transistor sockets are of a type which will allow the use of several different styles of pin breakout. It is, therefore, most important that both the transistor and the socket breakout be known so that no installation problems arise.

To aid in properly orienting the transistors in their sockets, the chassis and/or applicable layout diagrams will have the letter "C" beside the COLLECTOR pin contact.

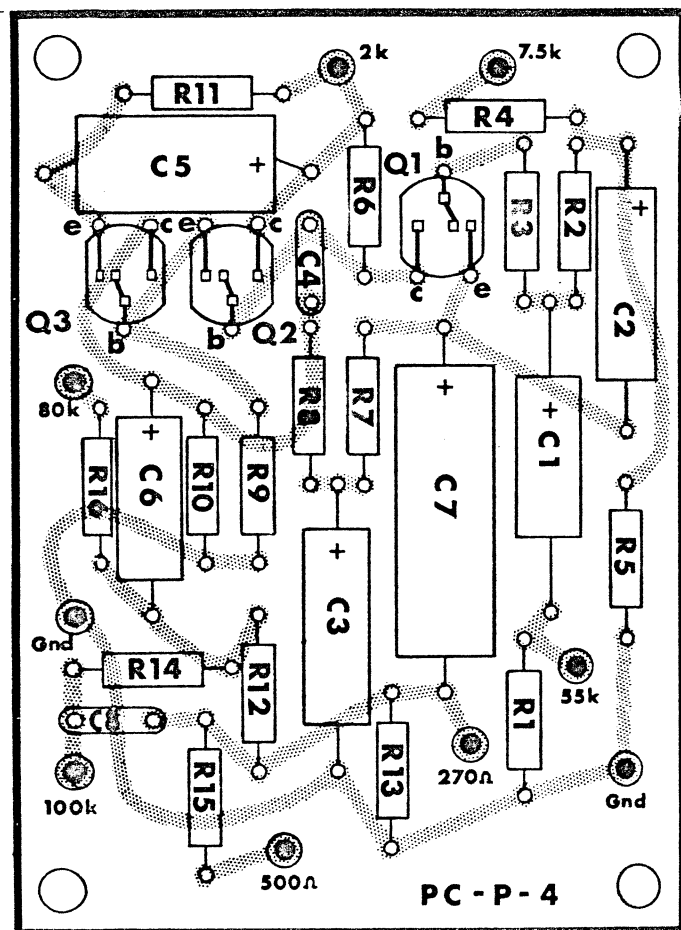


The XQ-4R socket is designed to accept QA transistors using the three outside pin connections. The pin connection inboard of the Emitter pin connection is externally connected to the base pin connection so that transistors having an "inline" pin breakout may be substituted. When installing non "inline" QA type transistors, be sure that the inboard connection is not used.

The XQ-3 and XQ-3-1 sockets are designed to accept QP type transistors. These sockets are polarized so that the transistor may be screwed into place only if properly installed.



Q1 - 2N2926 OR, YEL or GRN DOT  
 Q2 - 2N2926 BRN, RED or OR DOT  
 Q3 - 2N2613 or 2N508A



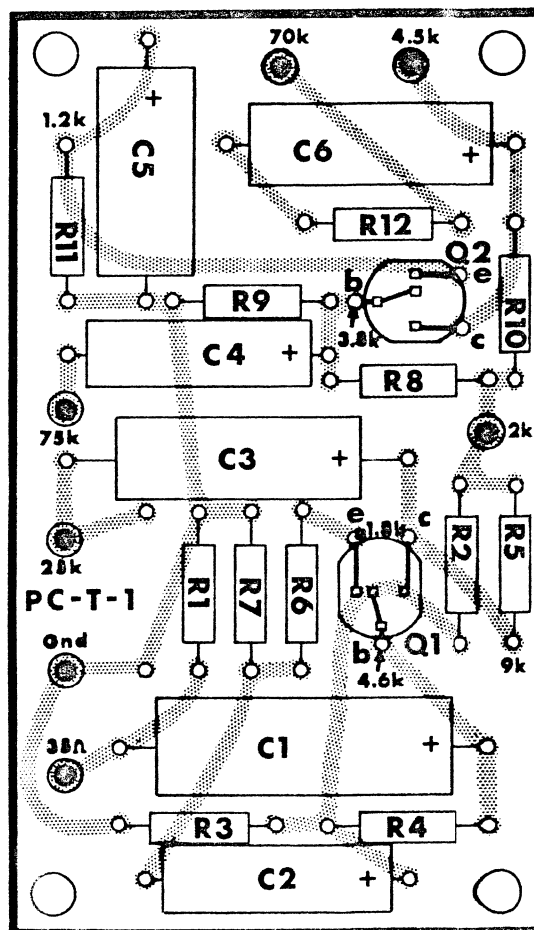
PREAMP

PC106-1L

#### Z-PC-P4 Parts List

|            |            |
|------------|------------|
| C1         | CETM-2/25  |
| C2, C3     | CETM-10/25 |
| C4         | CC-180     |
| C5         | CETM-250/3 |
| C6         | CETM-5/15  |
| C7         | CETM-50/25 |
| C8         | CC-.0056   |
| R1, R5, R9 | RC21-68K   |
| R8, R2     | RC21-33K   |
| R3         | RC21-470   |
| R10, R4    | RC21-5.6K  |
| R6         | RC21-12K   |
| R7         | RC21-27K   |
| R11        | RC21-1K    |
| R12        | RC21-1M    |
| R13        | RC21-820   |
| R14        | RC21-56K   |
| R15        | RC21-220   |

Q1 - 2N2926 YELLOW DOT  
 Q2 - 2N2926 YELLOW OR GREEN DOT



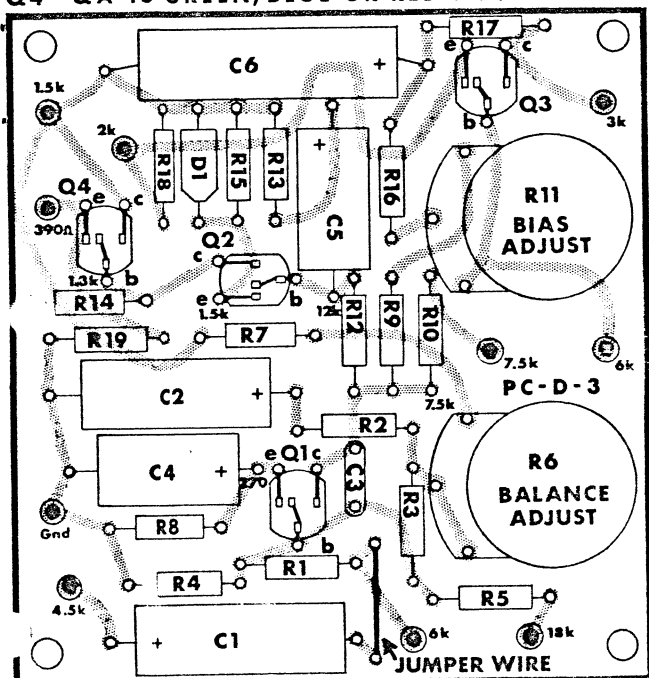
TONE CONTROL

PC105-1L

#### Z-PC-T1 Parts List

|        |            |
|--------|------------|
| C1     | CETM-2/25  |
| C4, C2 | CETM-10/25 |
| C6, C3 | CET-25/25  |
| C5     | CETM-100/6 |
| R1     | RC21-2.2M  |
| R2     | RC21-33K   |
| R3     | RC21-4.7K  |
| R4, R9 | RC21-1.5K  |
| R5     | RC21-6.8K  |
| R6     | RC21-68    |
| R7     | RC21-1.8K  |
| R8     | RC21-56K   |
| R10    | RC21-2.7K  |
| R11    | RC21-1.2K  |
| R12    | RC21-3.9K  |

Q1-QA-10 GREEN DOT  
 Q2-QA-9  
 Q3-QA-10 GREEN OR BLUE DOT  
 Q4-QA-10 GREEN, BLUE OR RED DOT

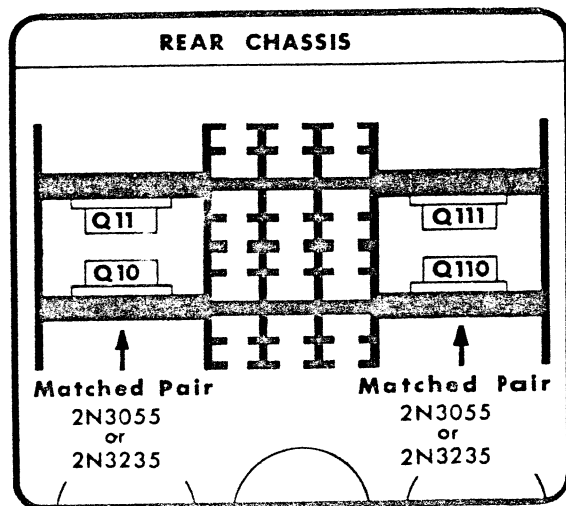


DRIVER

PC104-1L

#### Z-PC-D4 Parts List

|          |            |
|----------|------------|
| C1       | CETM-50/25 |
|          | CET-25/25  |
| C3       | CC-33 NPO  |
| C5, C4   | CETM-250/3 |
| C6       | CET-50/75  |
| R1       | RC21-2.7K  |
| R7, R2   | RC21-15K   |
| R3       | RC21-18K   |
| R4, R16  | RC21-3.3K  |
| R5       | RC21-27K   |
| R6       | RCV-10K-PC |
| R13, R8  | RC21-270   |
| R9       | RC21-220   |
| R10, R15 | RC21-47    |
| R11      | RCV-1K-PC  |
| R12      | RC21-4.7K  |
| R14      | RC21-1.5K  |
| R17      | RC21-1K    |
| R19, R18 | RC21-390   |
| D1       | SR1-5      |



OUTPUT

N-260-1L

#### Resistance Measurements

#### NOTE

1. All measurements made with Triplet Model 630 V.O.M. on RX1000 scale.
2. Negative side of V.O.M. battery to ground.

#### Preamp Ckt. Board

Input Selector - "Phono"  
 Phono Sensitivity - "C"

#### Tone Control Ckt. Board

|                |          |
|----------------|----------|
| Loudness       | Min.     |
| Input Selector | "Extra"  |
| Stereo         | "Stereo" |
| Balance        | "0"      |
| Tone Controls  | "0" Flat |
| Rumble Filter  | "Out"    |
| Scratch        | "Out"    |
| Tape Monitor   | "Out"    |

#### Driver Ckt. Board

|                   |           |
|-------------------|-----------|
| R6 Balance        | Max CW    |
| R11 Bias          | Max CCW   |
| Speaker Impedance | 8-16 ohms |

## 260 PARTS LIST

Capacitor

1 CEC 1000/75  
 2 CEC 2000/65  
 1 CETM 250/50  
 1 CETM 1000/30  
 6 CMM .068/250  
 2 CPM .25/200

C202  
 C11, C111  
 C203  
 C204  
 C12, C112

Diode

1 DZ-27

D203

Knob

2 KN-P-6CTT Bass, Treble, (small)  
 3 KN-P-6LTT Input, Selector, Balance  
 2 KN-P-8CT Bass, Treble, (large)  
 1 KN-P-10PTT Loudness

Panel

1 N 260 1

Transistor

2 Q2N2613 Preamp (PNP)  
 8 Q2N2926 Preamp/Tone Control (NPN)  
 2 QA-9 Driver (PNP)  
 6 QA-10 Driver (NPN)  
 4 QP-8 or QP-8-1 Output (NPN)

Q3  
 Q1, Q2, Q1, Q2  
 Q2  
 Q1, Q2, Q3, Q4  
 Q10, Q11, Q110, Q111

Resistor

4 RW2-.82  
 2 RW5-20  
 2 RW5-470

R14, R15, R114, R115  
 R18, R118  
 R19, R119

Potentiometer

1 RCV-50KST-3B Balance  
 2 RCVCC-100KT Bass, Treble  
 1 RCVD-100KT-3B Loudness

R204  
 R11, R13, R111, R113  
 R8, R108

Switch

1 SPS-11-3 Power  
 1 SRW-27-3 Stereo Selector  
 1 SRW-64-2 Input Selector  
 2 SS-22 Speaker impedance  
 4 SS-22-3 Tape, Rumble, Scratch, Compensator  
 1 SS-43 Phono Sensitivity  
 1 SS-22-3/3A Speakers

Rectifier

4 SR1-5  
 2 SR2-50

D1, D2, D101, D102  
 D201, D202

Printed Circuit

2 Z-PC-D4 Driver  
 2 Z-PC-P4 Preamp  
 2 Z-PC-T1 Tone Control

Transformer

1 TR 12-14 Power

Misc

1 A-J-P2-3 Amber Jewel  
 1 F-SB-1 1/4 Power Fuse  
 2 F-AGX-2 Output Fuse  
 1 J3-ST Phone Jack  
 1 V-NE-2A Neon Lamp



